<table>
<thead>
<tr>
<th>Purpose Code</th>
<th>Object Code</th>
<th>Salaries 100</th>
<th>Retirement Fringe Benefits 200</th>
<th>Purchased Services 400</th>
<th>Supplies 500</th>
<th>Capital Outlay 600</th>
<th>Other 800</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction</td>
<td>100</td>
<td>0.00</td>
<td>0.00</td>
<td>14,000.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>14,000.00</td>
</tr>
<tr>
<td>Support Services</td>
<td>200</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Governance/Admin</td>
<td>300</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Prof Development</td>
<td>400</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Family/Community</td>
<td>500</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Safety</td>
<td>600</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Facilities</td>
<td>700</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>315,500.00</td>
<td>670,500.00</td>
<td>0.00</td>
<td>986,000.00</td>
</tr>
<tr>
<td>Transportation</td>
<td>800</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>0.00</td>
<td>0.00</td>
<td>14,000.00</td>
<td>315,500.00</td>
<td>670,500.00</td>
<td>0.00</td>
<td>1,000,000.00</td>
</tr>
</tbody>
</table>

Adjusted Allocation: 0.00

Remaining: -1,000,000.00
A) APPLICANT INFORMATION - General Information

2. Executive summary: Please limit your responses to no more than three sentences.

Students in grades 4-12 in the Maple Heights City Schools have indicated a limited interest in pursuing STEAM (Science, Technology, Engineering, Art, and Mathematics), formerly STEM-oriented careers post high school, and see little relevance of math and science to their future goals. Ohio's New Learning Science Standards as well as the Common Core State Standards in Mathematics indicate an increased level of depth and complexity with a focus on inquiry-based learning; therefore, it is vitally important to engage our students' interest in these areas and equip them with the intellectual, technological, and scientific tools to compete globally in STEAM-oriented careers. To meet this need for our students, we are proposing to professionally develop our math and science teachers in grades 4-12 in project-based learning focusing on STEAM while creating two project-based Fabrication Labs (FAB Labs) at our high school as well as to enhance existing labs at our middle school and intermediate building.

This is an ultra-concise description of the overall project. It should not include anything other than a brief description of the project and the goals it hopes to achieve.

2200 3. Total Students Impacted:

This is the number of students that will be directly impacted by implementation of the project. This does not include students that may be impacted if the project is replicated or scaled up in the future.

4. Please indicate which of the following grade levels will be impacted:

- Pre-K Special Education
- Kindergarten
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

5. Lead applicant primary contact: - Provide the following information:

First Name, last Name of contact for lead applicant
Susan Jarosacak

Organizational name of lead applicant
Maple Heights City Schools

Address of lead applicant
5740 Lawn Avenue Maple Heights, Ohio 44137

Phone Number of lead applicant
216-587-6100 extension 3402

Email Address of lead applicant
susan.jarosacak@mapleschools.com

6. Are you submitting your application as a consortium? - Select one checkbox below

- Yes
- No

If you are applying as consortium, please list all consortium members by name on the "Consortium Member" page by clicking on the link below. If an educational service center is applying as the lead applicant for a consortium, the first consortium member entered must be a client district of the educational service center.

Add Consortium Members
7. Are you partnering with anyone to plan, implement, or evaluate your project? - Select one checkbox below

- Yes
- No

If you are partnering with anyone, please list all partners by name on the "Partnering Member" page by clicking on the link below.

Add Partnering Members

B) PROJECT DESCRIPTION - Overall description of project and alignment with goals

8. Describe the innovative project: - Provide the following information

The response should provide a clear and concise description of the project and its major components. Later questions will address specific outcomes and the measures of success.

The current state or problem to be solved; and

Traditionally, black, Hispanic, and low-income students are underrepresented in the sciences and "disproportionately drop from the high-achieving group in k-12 education". (National Research Council, 2011) Our student population is primarily comprised of African American students from low socio-economic backgrounds. Survey results indicate that our students have shown limited knowledge of and interest in pursuing STEM-oriented careers and the results of standardized tests in math and science in grades 4-10 indicate that our students are not proficient in these areas. We believe that our students need more opportunities to experience hands-on/minds-on critical thinking experiences and at an earlier age. We feel that our students are not aware of the many areas of their future that would be potentially enhanced through a strong background of science, mathematics, and critical thinking. We do not believe that our student population has had enough exposure to these areas. The Next Generation Science Standards as well as the Common Core Standards in Mathematics indicate an increased level of depth and complexity with a focus on inquiry-based learning that will require our students to think critically. In order for our students to be successful in these areas and compete globally for STEM-oriented careers, we will need to align curriculum, instruction, and inquiry-based technological tools.

The proposed innovation and how it relates to solving the problem or improving on the current state.

Our innovative project design involves the addition of two Fabrication Project Labs (FabLabs) onto our existing high school. The FabLabs will enable our students to focus on engineering and design and biomedical engineering. We will professionally train two high school science teachers in the Project Lead the Way Curriculum designed for the high school STEAM pathway. Wai, Lubinski, et al (2010) found that students who were exposed to rich, educational STEM opportunities were noticeably more likely to pursue higher levels of study, attain STEM careers, become published, and obtain patents. Our innovative program proposal also includes training ten teachers starting in grades 4-10 in Project-Based Learning Principles with a focus on STEAM. Our teachers will receive professional development through the Center for Innovative STEM Education (CISE). The ten teachers will form Professional Learning Communities (PLCs) within their buildings to share ideas about lesson design, project-based learning and assessment, and inquiry-based learning as a means to improve critical thinking skills with our students. Green (MacPherson, 2013) states that all teachers would benefit from professional development focused upon STEM principles such as "critical thinking, asking good questions, observation, and exploration" and project-based learning. We believe that students should have a foundation in project-based learning and STEAM in the early grades. Green (cited in MacPherson, 2013) found that "research study after research study on STEM education has shown that kids that experience STEM early through hands-on learning are the ones who will be best equipped to develop a strong understanding of STEM concepts as they get older." Ferreira and Trudel (2012) found that an emphasis on problem/project-based learning led to positive student attitudes toward science and promoted a strong sense of community in the classroom. In order to spark an early interest with our students as a part of our innovative project proposal, we plan to enhance existing technology/media labs at our intermediate and middle school buildings so that teachers may implement their training in project-based learning and STEAM principles on a daily basis in grades 4-10. Through other grant funding, we plan to implement STEAM/STEM clubs in our primary elementary buildings. We plan to formalize our STEAM/STEM, project-based learning in math, science, and art classes starting in the fourth grade. We feel that through enhanced project labs, project-based learning with an emphasis on STEAM/STEM, two well-equipped FabLabs at the high school, and opportunities for students to earn college credit through Project Lead the Way, our project will lead to positive attitudes regarding the sciences, interest in pursuing careers that will allow our students to compete globally, and to improve our students’ results on measures of student achievement in mathematics and science.

9. Which of the stated Straight A Fund goals does the proposal aim to achieve? - (Check all that apply)

Applicants should select any and all goals the proposal aims to achieve. The description of how the goals will be met should provide the reader with a clear understanding of what the project will look like when implemented, with a clear connection between the components of the project and the stated goals of the fund. If partnerships/consortia are part of the project, this section should describe briefly how the various entities will work together in the project. More detailed descriptions of the roles and activities will be addressed in Question 76.

- Student achievement (Describe the specific changes in student achievement you anticipate as a result of this innovation (include grade levels, content areas as appropriate) in the box below.)

The following goals are applicable to grades 4-12 in the content areas of science, technology, engineering, art, and mathematics. -Increased number of students taking higher level coursework in math and science. -Increase in the number of projects completed by students especially those that are STEM related. -Students report higher levels of satisfaction in STEAM courses. -Increase in student acceptance to post-secondary STEAM programs. -Students believe that they can be successful in technical studies. -Increased number of students scoring proficient or higher on statewide tests in math and science.

- Spending reductions in the five-year fiscal forecast or positive performance on other approved fiscal measures (Describe the specific reductions you anticipate in terms of dollars and spending categories over a five-year period in the box below or the positive performance you will achieve on
other approved fiscal measures. Other approved fiscal measures include a reduction in spending over a five-year period in the operating budget approved by your organization's executive board or its equivalent.)

| Spending reductions in the five-year fiscal forecast would be under operational within purchase services in the amount of $60,000. $60,000 is the net effect in spending reductions from $110,000 in sustained costs against $170,000 in sustained cost reductions. |

| Utilization of a greater share of resources in the classroom (Describe specific resources (Personnel, Time, Course offerings, etc.) that will be enhanced in the classroom as a result of this innovation in the box below.) |

| -Through Project Lead The Way high school students can earn up to 18 articulated engineering college credits on our high school campus at no cost to the district. Staff for this endeavor will be trained from our current pool of highly qualified teachers. -Through improved course offerings we expect to reduce the number of transient students while developing the potential of a highly motivated student population. -The FabLabs created through this grant will be primarily utilized by grades 9-12 on the high school campus and supplementarily used by grades 4-8. -There will be more opportunities for teachers to receive professional development from teachers already in the district as teachers receive training and in turn train their peers in the components of Project-Based Learning, this will allow us to minimize the cost spent on training staff members. -Teachers will be collaborating through Professional Learning Communities where they will create, share, and revise Project-Based Learning instruction. -Middle school students will be working in collaboration with high school students to share resources and align the curriculum. |

| Implementing a shared services delivery model (Describe how your shared services delivery model will demonstrate increased efficiency and effectiveness, long-term sustainability, and scalability in the box below.) |

| -Our FabLab facility will join a global network of field FabLabs managed by MIT's Center for Bits and Atoms to share resources and knowledge to further the educational reach of our students. -Through a partnership with Kelly Zelesnik, Academic Dean of Engineering & Information Technologies at Lorain County Community College, the Maple Heights staff will gain insights and experience into the design and implementation of STEAM-focused technologies and coursework. -Through a partnership with CISE which is codirected by Cleveland State University, The Great Lakes Science Center, and MC^2 STEM High School our teachers will receive professional development and support to implement Project-Based Learning. |

10. Which of the following best describes the proposed project? - (Select one)

| New - never before implemented |
| Existing: Never implemented in your community school or school district but proven successful in other educational environments |
| Mixed Concept: Incorporates new and existing elements |
| Established: Elevating or expanding an effective program that is already implemented in your district, school or consortia partnership |

C) SUSTAINABILITY - Planning for ongoing funding of the project, cost breakdown

11. Financial Documentation: - All applicants must enter or upload the following supporting information. The information in these documents must correspond to your responses in questions 11-14.

* Enter a project budget in CCIP (by clicking the link below)

Enter Budget

* If applicable, upload the Consortium Budget Worksheet (by clicking the link below)

* Upload the Financial Impact Table (by clicking the link below)

* Upload the Supplemental Financial Reporting Metrics (by clicking the link below)

Upload Documents

For applicants without an ODE Report Card for 2012-2013, provide a brief narrative explanation of the impact of your grant project on per pupil expenditures or why this metric does not apply to your grant project instead of uploading the Supplemental Financial Reporting Metric.

The project budget is entered directly in CCIP. For consortia, this project budget must reflect the information provided by the applicant in the Consortium Budget Worksheet. Directions for the Financial Impact Table are located on the first tab. Applicants must submit one Financial Impact Table with each application. For consortium applications, each consortium member must add an additional tab on the Financial Impact Tables. Partners are not required to submit a Financial Impact Table.

Applicants with an "Ohio School Report Card" for the 2012-2013 school year must upload the Supplemental Financial Reporting Metrics to provide additional information about cost savings and sustainability. Directions for the Supplemental Financial Reporting Metrics are located on the first tab of the document. If your organization does not have an "Ohio School Report Card" for the 2012-2013 school year, please provide an explanation in the text box about how your grant project will impact expenditures per pupil or why expenditure per pupil data does not apply to your grant project.

Educational service center, county boards of developmental disabilities, and institutions of higher education seeking to achieve positive performance on other approved fiscal measures should submit the budget information approved by an executive board or its equivalent on the appropriate tabs of the Financial Impact Table. Educational service centers should use the "ESC" tab and county boards of developmental disabilities and institutions of higher education should use the "non-traditional" tab.
12. What is the total cost for implementing the innovative project?

Responses should provide rationale and evidence for each of the budget items and associated costs outlined in the project budget. In no case should the total projected expenses in the budget narrative exceed the total project costs in the budget grid.

1,000,000.00 State the total project cost.

* Provide a brief narrative explanation of the overall budget.

Maple Heights CSD straight A grant award of $1,000,000. The grant award of $1,000,000 is expended in 3 parts; $14,000 + $315,500 + $670,500 = $1,000,000. A one time cost of $14,000 for district-wide professional development. (1) $10,000 for professional development geared at 10 teachers and administrators ($10,000 quoted costs from Professional Development training course administrator). (2) Cost of $4,000 for a project-based learning model and professional development geared at STEM staff ($2,000 instructor costs x 2 instructors = $4,000). Cost recap is (1) $10,000 + (2) $4,000 = $14,000. A one time cost of $315,500 for supplies/materials will be used to furnish the 1 newly built STEM/FAB lab and 3 renovated classrooms within 3 school buildings. Three of these new STEM/FAB labs will be renovated classrooms in 3 of our school buildings; one in the elementary school, one in the middle school, and one in the high school. The newly built STEM/FAB lab will be constructed at the High School. Overall supplies/materials include; (1) 120 computers x $850 per = $102,000, (2) Interactive Whiteboards budgeted at $15,000, (3) High Definition Televisions budgeted at $15,000, (4) Video / Data Projectors budgeted at $9,000, (5) 120 iPads x $850 per = $102,000, (6) Additional Technology budgeted at $72,500 to include 3D printers at each location, new software at each location, and various STEM/FAB Technologies for students. Cost recap is (1) $102,000 + (2) $15,000 + (3) $15,000 + (4) $9,000 + (5) $102,000 + (6) $72,500 = $315,500. A one time cost of $670,500 will be used for capital outlay - construction of 1 newly built STEM/FAB lab at the High School and renovated classrooms within 3 school buildings. Three of these new STEM/FAB labs will be renovated classrooms in 3 of our school buildings; one at the elementary school, one at the middle school, and one at the high school. Overall capital outlay is as follows; (1) Sitework construction of $32,569, (2) General Trades construction of $288,307, (3) Fire Protection implementation construction of $13,872, (4) Plumbing of $26,885, (5) HVAC of $59,892, (6) Electrical of $100,000, (7) Loose Furnishings of $23,750, (8) Other Hard Costs of $31,500 (floor coating, construction cleaning, etc.), (9) Soft Costs (i.e. Inspection, Insurance, Design, Attorney, Construction Management, LEED review) of $93,725. Cost recap is (1) $32,569 + (2) $288,307 + (3) $13,872 + (4) $26,885 + (5) $59,892 + (6) $100,000 + (7) $23,750 + (8) $31,500 + (9) $93,725 = $670,500.

13. Will there be any costs incurred as a result of maintaining and sustaining the project after June 30th of your grant year?

Sustainability costs include any ongoing spending related to the grant project after June 30th of your grant year. Examples of sustainability costs include professional development, equipment maintenance, and software license agreements. To every extent possible, rationale for the specific amounts given should be outlined. The costs outlined in the narrative section should be consistent and verified by the financial documentation submitted and explained in the Financial Impact Table. If the project does not have sustainability costs, applicants should explain why.

- Yes - If yes, provide a narrative explanation of your sustainability costs as detailed in the Financial Impact Table in the box below.

Sustaining costs of utilities ($86,000), insurance ($20,000), and materials costs ($4,000), is approximately $110,000 per year. New STEM/FAB lab and renovated High School classroom Water Utility $2,000 Electric Utility $18,000 Heating Utility $18,000 Internet Utility $18,000 Insurance $20,000 Total $78,000 (utilities of $56,000, insurance of $20,000, material costs of $2,000) Renovated Middle School classroom to STEM/FAB lab Electric Utility $7,500 Internet Utility $7,500 Material Costs $1,000 Total $16,000 (utilities of $15,000, material costs of $1,000) Renovated Elementary School classroom to STEM/FAB lab Electric Utility $7,500 Internet Utility $7,500 Material Costs $1,000 Total $16,000 (utilities of $15,000, material costs of $1,000)

- No - If no, please explain why (i.e. maintenance plan included in purchase price of equipment) in the box below.

14. Will there be any expected savings as a result of implementing the project?

- Yes

- No

Applicants with sustainability costs in question 13 or seeking to achieve significant advancement in spending reductions in the five-year forecast must address this response. Expected savings should match the information provided by the applicant in the Financial Impact Table. All spending reductions must be verifiable, permanent, and credible. Applicants may only respond “No” if the project will not incur any increased costs as a result of maintaining and sustaining the project after June 30th of your grant year. The Governing Board will use the cost savings as a tiebreaker between applications with similar scores during its final selection process. Cost savings will be calculated as the amount of expected cost savings less sustainability costs relative to the project budget.

60,000.00 If yes, specify the amount of annual expected savings. If no, enter 0.

If yes, provide details on the expected savings (i.e. staff counts and salary/benefits, equipment to be purchased and cost, etc.). If no, please explain

Sustaining costs of utilities ($86,000), insurance ($20,000), and materials costs ($4,000), is approximately $110,000 per year. This district has offset sustaining costs with savings for sustaining costs reductions. First, applying the mindset of “out with the old, in with the new” a lease payment on a district building which is no longer in use has terminated, that savings in the districts general fund is approximately $50,000 per year. The district will apply those would-be costs of lease payments on the old building to apply for the new buildings of the STEM/FAB labs. In addition, the district is also equipping the new STEM/FAB labs with solar panel engineering, minimum energy performance, on-site renewable energy, and green power (daylight and views, adjustable lighting, increased ventilation, thermal comfort design) reducing the dependency on outside vendors for energy by approximately $20,000 per year. Lastly, the estimated costs of retaining students who otherwise would leave the district for a Community School (as students are looking for state-of-the-art science/technology/engineering/math programs which would be a game-changer for this district if awarded the grant) is approximately...
## 15. Provide a brief explanation of how the project is self-sustaining.

All Straight A Fund grant projects must be expenditure neutral. For applications with increased ongoing spending as documented in question 11-14, this spending must be offset by expected savings or reallocation of existing resources. These spending reductions must be verifiable, permanent, and credible. This information must match the information provided in your Financial Impact Table. Projected additional income may not be used to offset increased ongoing spending because additional income is not allowed by statute. Please consider inflationary costs like salaries and maintenance fees when considering whether increased ongoing spending has been offset for at least five years after June 30th of your grant year. For applications without increased ongoing spending as documented in questions 11-14, please demonstrate how you can sustain the project without incurring any increased ongoing costs.

For educational service centers and county boards of developmental disabilities that are members of a consortium, any increased ongoing spending at the educational service center or county board of developmental disabilities may also be offset with the verifiable, permanent, and credible spending reductions of other members of the consortium. This increased ongoing spending must be less than or equal to the sum of the spending reductions for the entire consortium.

Explain in detail how this project will sustain itself for at least five years after June 30th of your grant year. After the initial grant award of $1,000,000 expended - the district will self-sustain the project with 3 measurers. First, applying the mindset of "out with the old, in with the new" a lease payment on a district building which is no longer in use has terminated, that savings in the districts general fund is approximately $50,000 per year. The district will apply those would-be costs of lease payments on the old building to apply for the new buildings of the STEM/FAB labs. In addition, the district is also equipping the new STEM/FAB labs with solar panel engineering, minimum energy performance, on-site renewable energy, and green power (daylight and views, adjustable lighting, increased ventilation, thermal comform design) reducing the dependency on outside vendors for energy by approximately $20,000 per year. Lastly, the estimated costs of retaining students who otherwise would leave the district for a Community School (as students are looking for state-of-the-art science/technology/engineering/math programs which would be a game-changer for this district if awarded the grant) is approximately $100,000 in savings per year (est. 20 students retained @ $5,000/per state foundation funds being retained). Reduction of costs/expected savings therefore is approximately $170,000 per year (50,000+20,000+100,000 = 170,000). When comparing reduction of costs/expected savings against sustaining costs, the net effect is $60,000 in savings for this sustainable project to the district. No additional income is depended upon. Sustainability is verified by credible measurers outlined above.

## D) IMPLEMENTATION - Timeline, scope of work and contingency planning

16. Please provide a brief description of the team or individuals responsible for the implementation of this project, including other consortium members and/or partners.

This response should include a list of qualifications for the applicant and others associated with the grant. If the application is for a consortium or a partnership, the lead should provide information on its ability to manage the grant in an effective and efficient manner. Include the partner/consortium members' qualifications, skills and experience with innovative project implementation and projects of similar scope.

Enter Implementation Team information by clicking the link below:

Add Implementation Team

For Questions 17-19 please describe each phase of your project, including its timeline, scope of work, and anticipated barriers to success.

A complete response to these questions will demonstrate specific awareness of the context in which the project will be implemented, the major barriers that need to be overcome and the time it will take to implement the project with fidelity. A strong plan for implementing, communicating and coordinating the project should be outlined, including coordination and communication in and amongst members of the consortium or partnership (if applicable). It is recognized that specific action steps may not be included, but the outline of the major implementation steps should demonstrate a thoughtful plan for achieving the goals of the project. The time line should reflect significant and important milestones in an appropriate and reasonable time frame.

### 17. Planning - Activities prior to the grant implementation

* Date Range - Present - October 2014

* List of scope of work (activities and/or events including project evaluation discussions, communication and coordination among entities).

Present - Award of Grant - Initial organizational meetings - Survey of student body - Development of proposal - Individual meetings with community partners - Research of past successes with similar innovative programs June 2014 -The district will identify the cadre of participating teachers in the initial round of STEAM/PBL training as well as identify the teachers that will be trained and certified in Project Lead the Way. July 2014 -The district will contact its community partner, CISE, and schedule professional development sessions to occur in August of 2014 for the initial cohort of identified teachers participating in the STEAM/PBL initial wave of training. -Curriculum will be developed in conjunction with the PLTW Pathway by the cohort of original teachers and CISE during the initial summer training sessions with a focus on creating a state of the art STEAM/PBL infused curriculum for grades 4-12 in a state of the art learning facility that is self-sustaining and evolving based on societal changes and student needs unique to an urban school. -20 Cohorts of grades 4-12 math and science teachers (4 teachers per cohort) will be created. August 2014 -Planning for the FAB lab will begin immediately upon grant award in conjunction with our partnership with Lorain Community College's Fab LAB consortium. SCOPE OF WORK - Begin planning the Introduction to Engineering and Design (IED) and Biomedical Engineering Sciences (BES) programs. IED will offer five college articulated credits to high school students. BES will offer 15 college articulated credits to high school students at no cost to the district. - Begin planning for community and professional partnerships.
The only anticipated barrier the Maple Heights City Schools has in the planning stages of this are: weather in the geographic location of the school, availability of the architectural/construction firm, and drafting of design to reality.

18. Implementation - Process to achieve project goals

* Date Range August 1, 2014 - June 30, 2015

* List of scope of work (activities and/or events, including deliverables, project milestones, interim measurements, communication, and coordination).
  - Two staff members to be trained in Project Lead the Way designed for the Maple High School STEAM pathway.
  - Ten math and science teachers in grades 4-12 to be trained in project based learning with a STEAM/Engineering emphasis at the partnership with CISe.
  - Initial program roll out of the 2014-2015 school year of pilot programs grades 4-10.
  - Technologies to support STEAM/PBL will be purchased and installed by August 1st, 2014.
  - Technology upgrades will be made as needed.
  - Pilot programs utilizing the CISE and STEAM/PBL curriculum designed and developed during training sessions will be implemented by the initial wave of teachers.
  - PLCs will begin. Training sessions will be held monthly during 2-hour early release sessions and professional release time. This aspect of implementation is key for the project to remain effective and self-sustaining long-term. Professional release time which will allow participants to model and observe effective STEAM/PBL learning environments so that collaboration can foster and breed the implementation of similar learning settings within the schools. The remaining 168 teachers grades 4-12 in PBL with a STEAM/Engineering emphasis in partnership with CISE.
  - District STEAM/PBL team will meet to maintain deadlines and monitor student progress.
  - BLT will meet and follow timeline and report to the STEAM/PBL team updates on progress of program.
  - TBT will look at distinctive student data and track growth over time and report data electronically to both the BLT and STEAM/PBL team to further check performance growth and impact of program effectiveness and make adjustments to the program to sustain the program long-term.
  - Construction of the FAB Lab will begin October 1st 2014.
  - District, BLTs and TBTs will meet monthly for the rest of the school year.
  - Full program roll out of the 2015-2016 school year for all STEAM/PBL programs.

* Anticipated barriers to successful completion of the planning phase.

Maple Heights City Schools anticipates some apprehension from the general education teachers as well as essential stakeholders in the training and overall delivery process of the curriculum initially. To prevent this, a structured curriculum, plan, and overview will be presented and modeled to participating stakeholders, including Principals, Curriculum Directors, Teachers, Paraprofessionals, Intervention Specialists, Technology Directors, Parents, and student leaders that describes the curriculum, pathways, technological upgrades at each building, educational approach, STEAM/PBL opportunities, articulated credits, and future educational opportunities. In the implementation stages there will still be potential barriers to construction of the FabLab due to weather in the geographic location of the school, availability of the architectural/construction firm, and drafting of design to reality.

19. Summative Evaluation - Plans to analyze the results of the project

* Date Range August 1, 2014 - June 30, 2015

* List of scope of work (activities and/or events, including quantitative and qualitative benchmarks and other project milestones).
  - The three tiered leadership team will meet monthly (Steam/PBL, BLT, TBT) to track student progress and monitor the overall impact of the program. STEAM/PBL overall team will make adjustments to the program based on the vision/mission of the district. Initial gains in math and science achievement will be tracked and measured. Change in the attitudes about science and STEM related fields as measured by beginning, mid and post year surveys. Tracking the increase in the number of students that are in PLTW in High School, including those that earned articulated credits. Tracking the growth measure of intermediate and middle school students in the STAR program in mathematics.
  - Tracking the change in the instruction as measured by beginning, mid and post year teacher surveys. The performance impact expected from the implementation of a state of the art STEAM/PBL infused curriculum for grades 4-12 would be expected to see its highest gain at the end of a four year cycle, THE 2018-2019 school year, the amount of time it takes a student to move from intermediate to middle and through IED to BES at the High School level.
  - Beyond the date range listed above, we intend to continue to monitor, track and measure student achievement and attitudes in STEAM and Project Based Learning annually.

* Anticipated barriers to successful completion of the summative evaluation phase.

A potential barrier may arise in the transition between the current state assessment format to the PARRC assessment due to a possible change in data reporting.

20. Describe the expected changes to the instructional and/or organizational practices in your institution.

The response should illustrate the critical instructional and/or organizational changes that will result from implementation of the grant and the impact of these changes. These changes can include permanent changes to current district processes, new processes that will be incorporated or the removal of redundant or duplicative processes. The response may also outline the expected change in behaviors of individuals (changes to classroom practice, collaboration across district boundaries, changes to a typical work day for specific staff members, etc.). The expected changes should be realistic and significant in moving the institution forward.

Please enter your response below:

We anticipate a change from a classroom instructional environment that is specific to the content and level that is being taught on a daily basis to a school environment where learning is deepened through the use of projects and instructional methods that personalize learning. We believe that when students are provided with learning experiences that are designed with an "inquiry" component that includes hands on/minds on activities that are a part of their daily instruction, students will develop into critical thinkers and learners who have internalized the relevance of science and mathematics to their future plans. Through this project teachers will be professionally developed with the expectation that they will effectively design, deliver, and evaluate project-based instruction with a focus on STEAM. Teachers will provide learning experiences for students that are challenging, rigorous, and engaging. They will collaborate across grade and disciplinary boundaries to advance the learning along a continuum progressing from content specific learning to holistic learning. Content --> Discipline --> Multi- --> Holistic Specific Specific Disciplinary
Currently, our teachers are providing instruction that is content specific. Through this project, we will change our instructional and organizational practices to reflect shifts to discipline specific, multidisciplinary, and integrative learning experiences. We will develop cohorts of teacher teams that will be led by the initial cadre of teachers trained in project-based learning to
E) SUBSTANTIAL IMPACT AND LASTING VALUE - Impact, evaluation and replication

The responses in this section are focused on the ability to design a method for evaluating the project's capacity for long-term sustainable results. Therefore, the questions focus on the method of defining the problem(s) the project hopes to solve and the measures that will determine if the problem(s) have been solved.

21. Describe the rationale, research or past success that supports the innovative project and its impact on student achievement, spending reduction in the five-year fiscal forecast or utilization of a greater share of resources in the classroom.

The response should provide a concise explanation of items which provide rationale that will support the probability of successfully achieving the goals of the project. Answers may differ based on the various levels of development that are possible. If the proposal is for a new, never before implemented project, the response should provide logical, coherent explanations of the anticipated results based on some past experience or rationale.

For projects that have been implemented on a smaller scale or successfully in other organizations, the response should provide the quantifiable results of the other projects. If available, relevant research in support of this particular proposal should also be included.

Please enter your response below.

As previously stated, our initial survey results of Maple Heights students indicate that students have limited knowledge of STEAM oriented careers and academic pursuits and its broader relevance in their lives. This has been further evidenced by our test scores that have shown our students are scoring well below proficient. An extremely small percent (less than 5%) of our graduating students have left for a STEAM college track. -10% of college students in America have declared Engineering as a major. According to Kevin Wilcox in Civil Engineering Magazine, only 5.4% of this 10% are African American (http://www.asce.org/CEMagazine/ArticleNs.aspx?id=23622324489#.U0wgA5zOhiV). Considering our population of students are 93% African American we have a great chance to decrease this disparity. - Our expectations for success are based on the students participating in local and national Project Lead The Way STEAM programs. - Lorain City Schools (local and similar to ours: both have about 20-25% gap closing rate, both graduating rates are about 70%, 73% African American Students in Lorain) -95% of students entering Junior year of program complete it. -89% of Seniors plan to attend college (remaining 11% planned to attend military) -96% of Seniors plan to enter an STEAM college track -The last graduating class earned over $65,000 in scholarships. Nationally Backed PLTW Data: -Students over the course of 6 years have scored higher on math and science test scores. -70% of all students at the end of their senior year intended to pursue STEAM careers. -93% intended to pursue post-secondary degrees.

22. Describe the overall plan to evaluate the impact of the concept, strategy or approaches used in the project.

This plan should include the methodology for measuring all of the project outcomes. Applicants should make sure to outline quantitative approaches to assess progress and measure the overall impact of the project proposal. The response should provide a clear outline of the methods, process, timelines and data requirements for the final analysis of the project's progress, success or failure. The applicant should provide information on how the lessons learned from the project can and will be shared with other education providers in Ohio.

* Include the name and contact information of the person who will be responsible for conducting the evaluation and whether this will be an internal or external evaluation.

We will be evaluating the impact of the concept in 4 ways: -Academic growth in the STEAM classroom using pre and post assessments on STEAM concepts. -Students will be given the same survey they were given prior to the implementation of the program at the end of the 1st year to see how opinions about the STEM areas have changed. -Data will be collected each year of how many students go through the STEM program, receive college credit and go to a college to receive further STEAM education for a STEM degree. -Measure the impact of the Project Based Learning PD using a teacher survey to measure engagement. -The person responsible for conducting the evaluation will be: Frank Major; Principal; Maple Heights City Schools

* Include the method by which progress toward short- and long-term objectives will be measured. (This section should include the types of data to be collected, the formative outputs and outcomes and the systems in place to track the project's progress).

| Start of year, mid, and post year surveys for teachers and students - Pre and Post assessments - District assessments - State assessment data - Course roster (amount of students in the program) and grades |

* Include the method, process and/or procedure by which the project will modify or change the project plan if measured progress is insufficient to meet project objectives.

Should there not be any noticeable gain in achievement in math or science initially, the team will meet with the CISE partnership to realign the curriculum and design future professional development to ensure that the content being delivered is best practices. Student interest, if not increased naturally with the construction of a state-of-the-art FabLab and the creation of a rigorous intermediate/middle school curriculum, would be increased with a district wide promotion of the program and educational themed nights devoted to the success of the program itself.

23. Describe the substantial value and lasting impact which the project hopes to achieve.

The response should provide specific quantifiable measures of the grant outcomes and how the project will lead to successful attainment of the project goals. Applicants should describe how the program or project will continue after the grant period has expired.

Please enter your response below.

Increase students awareness of STEM fields and the skills needed. Almost all middle school students will go through a STEM unified arts class that will allow us to make an impact on not only defining what STEM is for them and showing them the skills, but having every student try their hand at implementing the skills to see if they would like to pursue it in future grades. -Increase the amount of teachers incorporating technology, project based learning, and critical thinking in the classroom. This can be assessed through surveys to see which teachers are utilizing these skills and concepts. Teachers will take the PD and then meet in collaborative teams to continue to work on lessons and report feedback on the project based learning as we build PLCs to further this endeavor and make project based learning an important part of all classrooms. -Increase students pursuing STEM degrees after high school. The high school program along with project lead the way will earn...
24. Describe the specific benchmarks, by goal as answered in question 9, which the project aims to achieve in five years. Include any other anticipated outcomes of the project that you hope to achieve that may not be easily benchmarked.

The applicant should provide details on the quantifiable measures of short- and long-term objectives that will be tracked and the source of benchmark comparative data points. Responses should include specified measurement periods and preliminary success points that will be used to validate successful implementation of the project. If a similar project has been successfully implemented in other districts or schools, identification of these comparable benchmarks should be included.

**Student Achievement**

Several goals mentioned in question 9 speak to raising student achievement. Lorain City Schools, a district similar to Maple Heights demonstrated a raise in student achievement in the following way: -95% of students entering Junior year of program complete it. -89% of Seniors plan to attend college (remaining 11% planned to attend military). -96% of Seniors plan to enter a STEAM college track. -The last graduating class earned over $65,000 in scholarships. We anticipate the similar successes as our similar demographics include: - both have about 20-25% gap closing rate - both graduating rates are about 70%. - Approx. 90% minorities in both Lorain City Schools and Maple Heights City Schools. We will evaluate the success of the program in the following ways: - Start of year, mid, and post year surveys for teachers and students - Pre and Post assessments - District assessments - State assessment data - Course roster (amount of students in the program) and Grades Our overall goal of the grant, which the scope itself has not been attempted in a public high school is as follows: - Increased number of students taking higher level coursework in math and science. (Course roster) - Increase in the number of projects completed by students especially those that are STEAM related. (Capstone projects in PLTW) - Students report higher levels of satisfaction in STEAM courses. (Student/Teacher surveys) - Increase in student acceptance to post-secondary STEAM programs. (Course roster/College matriculation) - Students believe that they can be successful in technical studies. (Student/Teacher surveys) - Increased number of students scoring proficient or higher on statewide tests in math and science. (ODE Data/Report cards/Diagnostic testing)

**Spending Reduction in the five-year fiscal forecast**

According to our supplemental financial reporting matrix attachment, we will see a net savings of $60,000 per year implementing this grant. See below: Sustaining costs of utilities ($86,000), insurance ($20,000), and materials costs ($4,000), is approximately $110,000 per year. This district has offset sustaining costs with savings for sustaining costs reductions. First, applying the mindset of "out with the old, in with the new" a lease payment on a district building which is no longer in use has terminated, that savings in the districts general fund is approximately $50,000 per year. The district will apply those would-be costs of lease payments on the old building to apply for the new buildings of the STEM/FAB labs. In addition, the district is also equipping the new STEM/FAB labs with solar panel engineering, minimum energy performance, on-site renewable energy, and green power (daylight and views, adjustable lighting, increased ventilation, thermal comfort design) reducing the dependency on outside vendors for energy by approximately $20,000 per year. Lastly, the estimated costs of retaining students who otherwise would leave the district for a Community School (as students are looking for state-of-the-art science/technology/engineering/math programs which would be a game-changer for this district if awarded the grant) is approximately $100,000 in savings per year (est. 20 students retained @ $5,000 per state foundation funds being retained). Reduction of costs/expected savings therefore is approximately $170,000 per year (50,000+20,000+100,000 = 170,000). The net effect is $60,000 in savings for this sustainable project to the district. No additional income is depended upon. Sustainability is verified by credible measurers outlined above.

**Utilization of a greater share of resources in the classroom**

- Through Project Lead The Way high school students can earn up to 18 articulated engineering college credits on our high school campus at no cost to the district. Staff for this endeavor will be trained from our current pool of highly qualified teachers. - Through improved course offerings we expect to reduce the number of transient students while developing the potential of a highly motivated student population. - The FabLabs created through this grant will be primarily utilized by grades 9-12 on the high school campus and supplantarily used by grades 4-8. - There will be more opportunities for teachers to receive professional development from teachers already in the district as teachers receive training and in turn train their peers in the components of Project-Based Learning, this will allow us to minimize the cost spent on training staff members. - Teachers will be collaborating through Professional Learning Communities where they will create, share, and revise Project-Based Learning instruction. - Middle school students will be working in collaboration with high school students to share resources and align the curriculum.

**Implementation of a shared services delivery model**

- Our FabLab facility will join a global network of field FabLabs managed by MIT's Center for Bits and Atoms to share resources and knowledge to further the educational reach of our students. - Through a partnership with Kelly Zelesnik, Academic Dean of Engineering & Information Technologies at Lorain County Community College, the Maple Heights staff will gain insights and experience into the design and implementation of STEAM-focused technologies and coursework. - Through a partnership with CISE which is codirected by Cleveland State University, The Great Lakes Science Center, and MC^2 STEM High School our teachers will receive professional development and support to implement Project-Based Learning.

**Other Anticipated Outcomes**

- Increased teacher effectiveness - Further reduction of cost - Increased technological integration in the classroom - Increased performance in all subject areas not just the targeted math and science - More school districts modeling this project - Implementation of PBL outside STEAM classes - Increased collaboration with neighboring districts - Continued and new community partnerships - Raised awareness of STEAM and its relevance in their future lives outside of school - More vehicle teaming between buildings - Creation of larger PLCs - Community engagement and outreach

25. Is this project able to be replicated in other districts in Ohio?

- Yes
- No
If the applicant selects “Yes” to the first part of the question, the response should provide an explanation of the time and effort it would take to implement the project in another district, as well as any plans to share lessons learned with other districts. To every extent possible, applicants should outline how this project can become part of a model so that other districts across the state can take advantage of the learnings from the proposed innovative project. If there is a plan to increase the scale and scope of the project within the district or consortium, it should be included here.

* Explain your response

Yes this project is able to be replicated in other districts in Ohio. If they follow Maple Heights CSD approach, they will find that implementing STEM/FAB labs will encourage students (and it is the hope that minority students which is Maple Heights’ majority) will gain interest in science/technology/engineering/math classes and careers post high school. Model of the project is to (1) Gain support of the district students and parents to desire the interest in these subjects, (2) Fulfill their desire by constructing STEM/FAB labs where students can be exposed to materials and project-based learning to gain the much needed advantage to compete in an every changing landscape, (3) Formulate project-based learning models, (4) Finalize construction on STEM/FAB labs, (5) Market the program district-wide and population wide - gain support and outside marketing opportunities, (5) Let the children learn, grow, and compete on an even playing field to acquire the skills needed to pursue a career within their desired field.

By virtue of applying for the Straight A Fund, all applicants agree to participate in the overall evaluation of the Straight A Fund for the duration of the evaluation time frame. The Governing Board of the Straight A Fund reserves the right to conduct an evaluation of the project and request additional information in the form of data, surveys, interviews, focus groups and other related data on behalf of the General Assembly, Governor and other interested parties for an overall evaluation of the Straight A Fund.

PROGRAM ASSURANCES: I agree, on behalf of this applicant, and any or all identified consortium members or partners, that all supporting documents contain information approved by a relevant executive board or its equivalent and to abide by all assurances outlined in the Straight A Assurances (available in the document library section of the CCIP).

I, Charles T. Keenan, Ph.D., Superintendent of Maple Heights Schools agree to abide by all assurances outlined in the Straight A assurances.
<table>
<thead>
<tr>
<th>Consortium Contacts</th>
</tr>
</thead>
</table>

No consortium contacts added yet. Please add a new consortium contact using the form below.
## Partnerships

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Telephone Number</th>
<th>Email Address</th>
<th>Organization Name</th>
<th>IRN</th>
<th>Address</th>
<th>Delete Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Debby K.</td>
<td>Jackson</td>
<td>216-687-3753</td>
<td><a href="mailto:d.jackson1@csuohio.edu">d.jackson1@csuohio.edu</a></td>
<td>Cleveland State University (CISE)</td>
<td></td>
<td>2121 Euclid Avenue, Cleveland, Ohio, OH 44115</td>
<td></td>
</tr>
<tr>
<td>Kelly</td>
<td>Zelesnik</td>
<td>440-366-7028</td>
<td><a href="mailto:kzeleni@lorainccc.edu">kzeleni@lorainccc.edu</a></td>
<td>Lorain Co Community College</td>
<td>063297</td>
<td>1005 N Abbe Rd, Elyria, OH, 44035-1613</td>
<td></td>
</tr>
<tr>
<td>First Name</td>
<td>Last Name</td>
<td>Title</td>
<td>Responsibilities</td>
<td>Qualifications</td>
<td>Prior Relevant Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>--------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adam</td>
<td>Smith</td>
<td>High School Science Teacher</td>
<td>Implementation of STEAM programming at the Middle School.</td>
<td>Highly qualified in 7-12 integrated science instruction.</td>
<td>- Co-Advisor of STEM Club in High School-Prior Research Experience at the Ohio State University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mary</td>
<td>Carson</td>
<td>High School Science Teacher</td>
<td>Implementation of STEAM programming at the high school.</td>
<td>Highly qualified in 7-12 integrated science instruction.</td>
<td>Prior research experience at Case Western Reserve University.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Susan</td>
<td>Jaroscak</td>
<td>Director of Instruction and Gifted Instruction</td>
<td>- Implementation on district level. - Manage all aspects of grant budget. - Oversee the implementation of the project's goals.</td>
<td>- Grants Manager for all of Maple Heights City Schools-Licensed as an Administrative Specialist - Directly responsible for instructional programming</td>
<td>Grants manager for Maple Heights City Schools which includes 21st Century, Title 1, Gifted, etc. for the past five years.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matt</td>
<td>Kitchen</td>
<td>Middle School Math Teacher</td>
<td>Implementation of STEAM programming at the Middle School.</td>
<td>- Certified in Middle School Math &amp; Science Instruction</td>
<td>- Design Squad Engineering Challenge Advisor-Honors and Gifted Instructor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matthew</td>
<td>Muccio</td>
<td>Assistant Treasurer</td>
<td>Assistance with grant implementation, fiscal budget, and project construction.</td>
<td>- Licensed Treasurer by Ohio Department of Education - 5 years audit experience with a CPA firm, primarily auditing school districts and government entities - Experience with Schedule of Expenditures of Federal Awards and A-133 compliance</td>
<td>- Licensed Treasurer by Ohio Department of Education - 5 years audit experience with a CPA firm, primarily auditing school districts and government entities - Experience with Schedule of Expenditures of Federal Awards and A-133 compliance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>